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PATENT SPECIFICATION



Application Date: Aug. 26, 1920. No. 21,786/20.

170,991

Complete Left: May 19, 1921.

Complete Accepted: Nov. 10, 1921.

PROVISIONAL SPECIFICATION

Improved Apparatus for use in Washing Out Locomotive or other Boilers.

We, HENRY BRUSCOMBE, of 17, Garton Terrace, East Park Parade, Leeds, in the County of York, a British subject, and THE ECONOMICAL BOILER WASHING COMPANY, LIMITED, of 14, New Burlington Street, London, W. 1, a British company, do hereby declare the nature of this invention to be as follows:—

This invention relates to apparatus for use in washing out locomotive or other boilers, and although the invention has been more particularly designed for use with systems and apparatus for washing out locomotive boilers with hot water it is not limited to use with such systems but may be employed with other systems or apparatus for washing out either locomotive or other boilers.

The invention has for its object an improved water discharging device or fitting for use in the boiler and adapted to be connected to the wash-out water supply pipe or main, the water discharge device according to this invention being such that, a number of jets of water are simultaneously projected therefrom, and, as compared with washing out nozzles usually employed, a more thorough and systematic washing out of all the water spaces of a boiler may be obtained and the time occupied and water used in washing out a given boiler materially reduced.

The present invention principally consists in a water discharge fitting for use in washing out boilers comprising a metal pipe or tube preferably closed at one end and provided at its other end with means for connecting it with one end of the flexible pipe or hose the other end of which is connected to the washout water supply, the said metal pipe or tube being provided at intervals in its length with

water discharge orifices whereby a plurality of jets of water are simultaneously discharged or projected laterally from said pipe or tube.

Further according to this invention the improved apparatus comprises a portion of pipe preferably having a closed end and provided at intervals in its length with water discharge nozzles having a conical or tapering bore and so formed and arranged that the wider portions or bases of the cones face inwardly and that the axial centre lines of the cones are at such an angle or at such angles to the longitudinal centre line of the pipe that the jets of water discharged through said cones or nozzles are projected at the desired angle or angles to the said centre line of the pipe. The size, i.e. diameter of the bore, of the discharge nozzles in relation to the pipe depends on the diameter of said pipe and the number of nozzles to be provided therein, the discharge orifices of the nozzles being of such a size as to ensure jets of considerable velocity being projected from the pipe. The nozzles may be arranged in the same straight line along one side of the pipe so as to all project water in the same direction radially of the pipe, or they may be arranged in different longitudinal planes of the pipe so as to project water in a number of directions radially of said pipe.

The internally coned nozzles above mentioned are preferably so formed and mounted in the pipe that their outer ends are flush with the outer surface of the pipe, and are preferably externally threaded and screwed into position in tapped holes in the pipe. The nozzles are also preferably arranged in the pipe

[Price 1/-]

with their centre lines at the desired angle to the direction of flow of the water in the pipe so that the jets projected from the pipe will be at right angles to the longitudinal centre line of the pipe, the nozzles sloping say to the extent of 20° from their outer ends towards the closed end of the pipe.

It will be understood that when, in washing out a boiler, a fitting according to this invention is used, it will be passed into the boiler through one of the usual wash-out holes and on water being delivered thereto a number of jets of water will be projected simultaneously by the one pipe or fitting and thus a number of portions of the surfaces to be washed will be played upon by water at the same time so that the time taken to wash out a given boiler will be materially reduced as compared with the arrangements now usually employed. Further the washing out may be performed in an efficient and systematic manner by slowly rotating the pipe

and, as the washing proceeds, moving said pipe longitudinally, so that it is ensured that water will be directed upon all parts within range of the nozzles. The manner in which a fitting according to this invention may be applied to washing the various parts of a boiler (tubes, water spaces around fire box, stays, etc.), will be apparent to those familiar with the operation of washing out boilers without further description herein. Further, where boilers are to be washed out by boiler washing apparatus comprising means according to this invention, the number of plug holes in the boiler may be reduced as the effective area acted upon by the jets issuing from the row or series of nozzles is far greater than is the case with the single jet nozzle apparatus heretofore usually employed.

Dated this 26th day of August, 1920.

JOHN P. O'DONNELL & Co.,

Agents for Applicants,

14 & 15, Conduit Street, London, W. 1.

COMPLETE SPECIFICATION.

Improved Apparatus for use in Washing Out Locomotive or other Boilers.

We, HENRY BROSCOMBE, of 17, Garton Terrace, East Park Parade, Leeds, in the County of York, a British subject, and THE ECONOMICAL BOILER WASHING COMPANY, LIMITED, of 14, New Burlington Street, London, W. 1, a British company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to apparatus for use in washing out locomotive or other boilers, and although the invention has been more particularly designed for use with systems and apparatus for washing out locomotive boilers with hot water it is not limited to use with such systems but may be employed with other systems or apparatus for washing out either locomotive or other boilers.

The invention has for its object an improved water discharging device or fitting for use in the boiler and adapted to be connected to the wash-out water supply pipe or main, the water discharge device according to this invention being such that, a number of jets of water are simultaneously projected therefrom at intervals

in its length and, as compared with washing out nozzles usually employed, a more thorough and systematic washing out of all the water spaces of a boiler may be obtained and the time occupied and water used in washing out a given boiler materially reduced, the device being passed into washing out position in the boiler through any selected one of the usual wash-out holes as will be understood.

The present invention principally consists in a water discharge fitting for use in washing out boilers comprising a metal pipe preferably closed at one end and provided at its other end with means for connecting it to one end of the flexible pipe or hose the other end of which is connected to the wash-out water supply, the said metal pipe being provided at intervals in its length with water discharge orifices, preferably in the same longitudinal plane of the pipe, whereby a plurality of jets of water are simultaneously projected laterally from said pipe, the metal pipe being provided internally at each discharge orifice with a nozzle having a conical or tapering bore the wider end of which, constituting the

base of the cone, faces inwardly, and the outer end of which is preferably flush with the outer surface of the pipe.

The invention further consists in a water discharge fitting for use in washing out boilers constructed as pointed out in the claims and as hereinafter described with reference to the accompanying drawing in which,—

Fig. 1 is an outside view of a water discharge device according to one embodiment of the invention.

Fig. 2 is a sectional view of a portion of the device shown in Fig. 1 but drawn to a larger scale.

Fig. 3 is an outside view of a modified construction of device according to the invention, and

Fig. 4 is a sectional view of a portion of the device shown in Fig. 3 but drawn to a larger scale.

Like reference numbers indicate like parts in the several figures of the drawing.

Referring to the drawing the improved apparatus according to this invention comprises a portion of pipe 1 preferably having a completely closed end 2 and provided internally at intervals in its length with water discharge nozzles 3 having a conical or tapering bore 4 and so formed and arranged that the wider portions or bases 6 of the cones face inwardly and that the axial centre lines of the cones are at such an angle or at such angles to the longitudinal centre line of the pipe 1 that the jets of water discharged through said cones or nozzles are projected at the desired angle or angles to the said centre line of the pipe.

The size, i.e. diameter of the bore 4 of the discharge nozzles 3 in relation to the pipe 1 depends on the diameter of said pipe and the number of nozzles to be provided therein, the discharge orifices 6 of the nozzles being of such a size as to ensure jets of considerable velocity being projected from the pipe 1. The nozzles are preferably arranged in the same straight line along one side of the pipe as shown in Figs. 1 and 2 so as to all project water in the same direction radially of the pipe, but they may be arranged in different longitudinal planes of the pipe as shown in Figs. 3 and 4 so as to project water in a number of directions radially of said pipe.

The internally coned nozzles 3 above mentioned are preferably so formed and mounted in the pipe 1 that their outer ends are flush as shown with the outer surface of the pipe 1, and are preferably externally threaded as at 7 and screwed into position in tapped holes in the pipe.

The nozzles are also preferably arranged in the pipe with their centre lines at the required angle to the direction of flow of the water in the pipe so that, due to the direction of flow and pressure of the water in pipe 1, the jets projected from the pipe will be at right angles to the longitudinal centre line of the pipe, the nozzles sloping from their outer ends towards the closed end of the pipe and being at an angle of say 70° to the longitudinal centre line of the pipe 1.

If desired the coned nozzle 3 nearest the closed end 2 of the pipe 1 may be at right angles to the longitudinal centre line of pipe 1, or more nearly so than the remaining nozzles so that the water from this nozzle would be directed towards and on to the boiler tube plate and wash the same when, in washing out the boiler, the end 2 of the pipe is placed close to such tube plate. Also if desired the nozzle 3 nearest the end of the pipe 1 to which the hose is connected may be arranged at an angle to the longitudinal centre line of the pipe 1 greater to the desired extent than the angle of the other nozzles so that when said nozzle is in a position in the boiler close to the boiler tube plate through which the fitting has been passed said nozzle will direct water towards and on to said tube plate and wash the same.

It will be understood that when, in washing out a boiler, a fitting according to this invention is used it will be passed into the boiler through one of the usual wash-out holes and on water being delivered thereto a number of jets of water will be projected simultaneously by the one pipe or fitting and thus a number of portions of the surfaces to be washed will be played upon by water at the same time so that the time taken to wash out a given boiler will be materially reduced as compared with the arrangements now usually employed. Further the washing out may be performed in an efficient and systematic manner by slowly rotating the pipe and, as the washing proceeds, moving said pipe longitudinally, so that it is ensured that water will be directed upon all parts within range of the nozzles. The manner in which a fitting according to this invention may be applied to washing the various parts of a boiler (tubes, water spaces around fire box, stays, etc.), will be apparent to those familiar with the operation of washing out boilers without further description herein. Further where boilers are to be washed out by boiler washing apparatus comprising means according to this invention, the number of plug holes in the boiler may be

reduced as the effective area acted upon by the jets issuing from the row or series of nozzles is far greater than is the case with the single jet nozzle apparatus heretofore usually employed.

The nozzles may be so pitched along the length of the pipe that when the pipe is applied to say the washing out of the water spaces around the fire box for example, the jets extend between rows of such stays.

As will be understood plug holes through which the pipes are passed are with advantage located at the ends of the boiler and fire box in such relation to the smoke tubes and other parts as to wash the greatest possible area thereof with the minimum number of plug holes.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. For use in washing out locomotive or other boilers, a water discharge device or fitting comprising a metal pipe preferably closed at one end and provided at its other end with means for connecting it to one end of the flexible pipe or hose the other end of which is connected to the washout water supply, the said metal pipe being provided at intervals in its length with water discharge orifices preferably

in the same longitudinal plane of the pipe, whereby a plurality of jets of water are simultaneously projected laterally from said pipe, the metal pipe being provided internally at each discharge orifice with a nozzle having a conical or tapering bore the wider end of which, constituting the base of the cone, faces inwardly, and the outer end of which is preferably flush with the outer surface of the pipe.

2. A water discharge device as claimed in Claim 1, in which the nozzles slope from their outer ends towards the closed end of the pipe at such an angle to the longitudinal centre line of the pipe that, due to the direction of flow and pressure of the water in the pipe, the jets projected from the pipe will be at right angles to the longitudinal centre line of the pipe.

3. A water discharge device as claimed in Claim 1, or in Claim 2, in which the nozzles are externally threaded and are screwed into place in tapped holes in the side wall of the pipe.

4. A water discharge device for use in washing out locomotive or other boilers, substantially as described with reference to the accompanying drawing and for the purposes set forth.

Dated this 19th day of May, 1921.

JOHN P. O'DONNELL & Co.,
Agents for Applicants,
14 & 15, Conduit Street, London, W. 1.

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FIG.

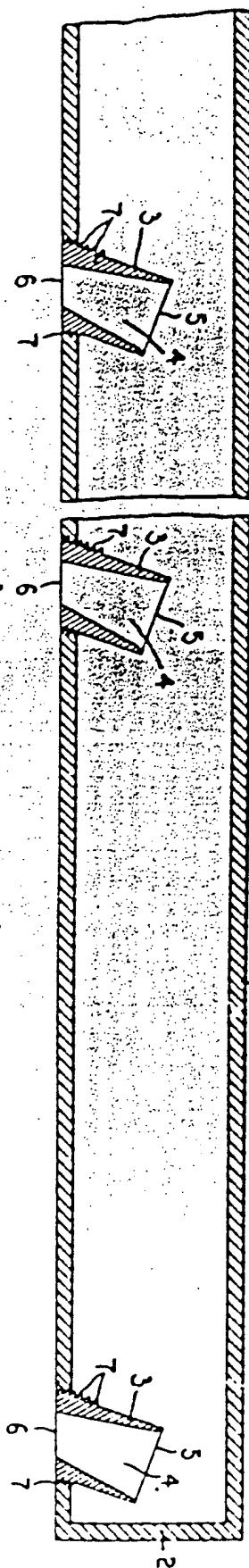


FIG. 2

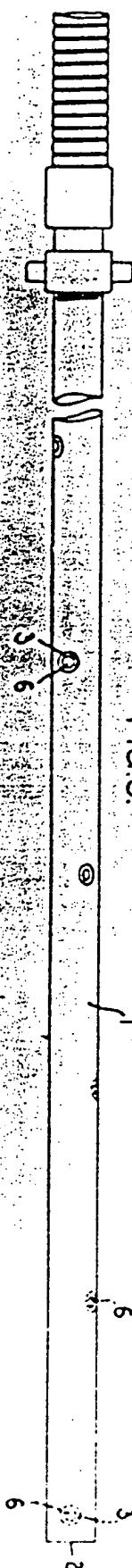


FIG. 3

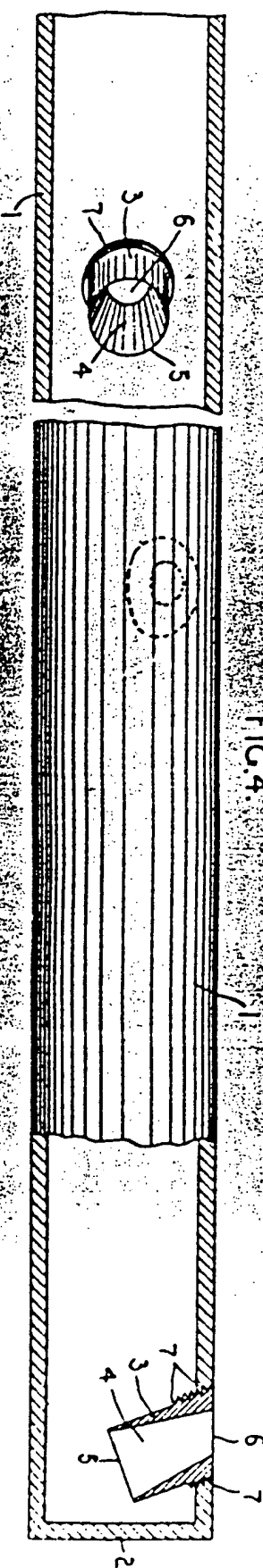


FIG. 4